

REMARKS

Claims 6-8, 10-17, 19, 30, and 33-39 remain pending. Claims 20-29, 31, and 32, withdrawn as directed to a nonelected invention, were previously cancelled.

Claim 19, which was objected to, has been amended.

Interview Request

Applicant requests an interview with the Examiner. The Examiner is cordially requested to arrange an interview through the Applicant's representative, whose contact information is provided at the end of this paper.

Declarations of David Wollan Under 37 C.F.R. § 1.132

Applicant submits a First Declaration of David Wollan Under 37 C.F.R. § 1.132 and a Second Declaration of David Wollan Under 37 C.F.R. § 1.132. Attached to the Second Declaration of David Wollan Under 37 C.F.R. § 1.132 are copies of unexecuted page 9, which has a more legible table, and unexecuted page 10, with a clearer figure.

I. Evidence of Praise in the Field of the Invention.

Applicant's invention was considered such an important advance that it received a prestigious industry award. In the First Declaration, Mr. Wollan states that the Memstar Alcohol Adjustment process was awarded the Wine Industry Suppliers Association's "WOW" award, as described in the article "Memstar Wows Judges with Competition Triumph," *Australian & New Zealand Grapegrower & Winemaker*, pp. 60-61 (July 2007). The First Declaration also states that the Memstar Alcohol Adjustment process that won the award is a process according to the processes claimed in independent claims 6 and 35, establishing a nexus between the claimed

invention and the Memstar Alcohol Adjustment process that won the award; a nexus is also established by the figure on the first page of the article. *See Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281 (Fed. Cir. 1985); *In re Tiffin*, 448 F.2d 791 (CCPA 1971).

The First Declaration describes other evidence demonstrating praise and recognition of the significance of the invention by others in the field. At the 2010 Intervitis Interfructa International (IVIF) Congress, a paper submitted by scientists from two universities and from a company whose own process is a commercial competitor to the process of the claimed invention recognized that the claimed invention overcomes significant problems that others in the field had been unable to solve. During the presentation associated with this paper, the slides of which were included in the IVIF Congress materials), a presenter from the commercial competitor Vason Group acknowledged that the claimed process overcomes significant problems of its own and other competitors' processes. The slides also acknowledge the improvement made in yield with the methods of claims 7, 8, and 36-38.

II. Evidence of State of the Art at the Time of Invention; How the Nielsen and Michaels Processes Were Viewed in the Field of Art; Unexpected Benefits of Mr. Wollan's Invention

The Second Declaration of David Wollan first established Mr. Wollan's credentials as a skilled winemaker and wine technologist who has the knowledge and experience to give evidence about what those in the field understood from the Nielsen and Michaels documents and how those in the field viewed the disclosures in these two documents.

First, Mr. Wollan brings to the Examiner's attention a patent application (which eventually issued as US 5,817,359) filed shortly after publication of the Nielsen document by the same Alan Sherman Michaels whose WO 93/22036 is also cited in the rejection, in which Mr.

Michaels pointed to serious shortcomings of using a reverse osmosis process, such as in Nielsen WO 92/08783, for removing alcohol from beverages.

Secondly, Mr. Wollan discusses the technical basis for concluding the Nielsen method cannot result in a beverage with a lower alcohol concentration unless water is added to the retentate. In short, reverse osmosis and nanofiltration membranes work on a principle of size exclusion and solid diffusion filtration. A membrane that allows the larger ethanol molecule to pass will also allow the smaller water molecule to pass at a greater rate. Further, because of the laws of thermodynamics, even if a reverse osmosis membrane selectively retained water but not ethanol from a mixture of the two (a practical impossibility here), the membrane would need to be of enormous size and require generation of very high pressures to overcome the osmotic pressure of concentrated alcohol solutions. In a word, it is not technically possible to use the proposed Nielsen process to reduce ethanol concentration in a beverage without diluting the retentate with water.

Mr. Wollan provided experimental data supporting his observations on the principles of the Nielsen reverse osmosis process.

Third, Mr. Wollan brings to the Examiner's attention that, in the application that eventually issued as US 5,817,359 and which was filed less than a year after publication of Michaels, WO 93/22036, Mr. Michaels admitted that his earlier process had "serious limitations." Michaels taught overcoming this problem by recycling in the strip of some previously processed alcoholic strip or dealcoholized product. Such a process would result in loss of product or reduction in rate of alcohol transfer because of the strip solution already containing a concentration of ethanol from the start. Mr. Wollan also noted that the cited

Michaels publication itself acknowledges a problem with passing water from the strip into the beverage. This feature makes the proposed process unworkable because of regulations.

Fourth, Mr. Wollan described unexpected benefits of his claimed process. Mr. Wollan's process unexpectedly overcomes Michaels's acknowledged problem of permeation of water from the strip solution into the beverage. The additional process feature of claims 7, 8, and 36-38 is also an advantage that could not have been expected from the prior art processes.

Claim Objections

Claim 19 is amended to depend on claim 17. Appellant requests reconsideration of this claim in view of the correction.

Rejections Under 35 U.S.C. § 103

Claims 6, 10-12, 15-17, 19, 30, 33-35, and 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nielsen (WO Pat. No. 92/08783) in view of Michaels (WO Pat. No. 93/22036). This rejection is respectfully traversed.

Claims 7, 8, 36, and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nielsen (WO Pat. No. 92/08783) in view of Michaels (WO Pat. No. 93/22036) and Zhang et al. (U.S. Pat. No. 6,586,638). This rejection is respectfully traversed.

I. The art provided no reason to modify the Nielsen process in a way that would result in Applicant's invention.

There is no reason in the prior art, which recognized both the Nielsen and the Michaels processes as seriously flawed, to combine those flawed processes. There is further no reason,

given the view the art took of the Nielsen process, to begin from that process at all. Prima facie obviousness fails, then, for lack of a reason to make the combination or to make the further modifications to come to the claimed invention.

The reverse osmosis process described in the Nielsen document was viewed in this field of art, as evidenced by Michaels, US 5,817,359, as a process that had a number of serious drawbacks. Reverse osmosis and nanofiltration passed into the permeate not only alcohol, but also water, flavor and fragrance components, dissolved gases, and certain low-molecular-weight, nonionic solutes such as organic acids and simple sugars. Michaels, US 5,817,359, col. 1, ll. 53-63. In addition, the concentrate retentate was diluted with water to replace the water removed in the permeate, causing changes in flavor, fragrance, color, acidity, stability and “the like.” Col. 1, l. 63-col. 2, l. 2. These were lost when the permeate was discarded. Michaels, US 5,817,359 explicitly teaches, “Restoration of these depleted components by their re-addition to the concentrate in proper proportions to produce a high-quality product is generally difficult, costly, or impossible,” col. 2, ll. 2-5, leading one away from considering beginning from Nielsen in the first place. The references of record do not teach how this restoration might be accomplished, and this statement in Michaels, US 5,817,359 is direct evidence that the art hadn’t a clue that it could be done by Mr. Wollan’s claimed method. Mr. Michaels, inventor of both the Michaels document cited in the rejection and Michaels, US 5,817,359, disparaged and discounted the process of removing RO permeate and replacing it with water as in the Nielsen process. Rather, Michaels teaches in his later disclosure that one should adjust the strip solution in the perstraction process. Any modification of the reverse osmosis process would be “difficult, costly, or impossible.”

In addition, the Nielsen document teaches to discard the ethanol-containing permeate. The Michaels document also teaches to discard its ethanol-containing strip solution. There is nothing in either document or taking both together that gives a reason to reintroduce the permeate back into the beverage. Rather, this is the portion intended to be separated and disposed of.

Moreover, referring now to Figure 1 of Nielsen, permeate stream 38 will actually be lower in alcohol and retentate will be higher in alcohol, as explained in the Second Declaration of David Wollan, paragraph 4. The concentration of alcohol in the retentate is only lowered if pure water is added to replace the volume removed as permeate. See also Michaels, US 5,817,359, col. 1, ll. 63-65.

Michaels, US 5,817,359 also recognized that the process of the cited Michaels document has “serious limitations which can have adversely affect the properties, characteristics, and quality of a dealcoholized beverage obtained thereby. Since the membrane employed for that process is freely permeable to any volatile solute which may be present in either liquid phase in contact with it, the volatile components present in the original beverage are free to leave the beverage and dissolve in the strip solution if the activity of any such solute is higher in the beverage than in the strip solution. Thus, volatile flavor and fragrance components, as well as dissolved gases such as carbon dioxide and sulfur dioxide, which may be present in the original beverage, can be depleted during the perstraction process.” Michaels, U.S. Patent 5,817,359, column 2, lines 39-52. And this continues to be the opinion of the industry, as shown by the Ferrarini document described in the Second Declaration of David Wollan at the bottom of page 6. The later Michaels patent further acknowledged the problem of water passing from strip solution into the wine, a serious drawback for the process due to strict regulation in various

countries including our own. Second Declaration of David Wollan, page 7. Neither document suggests how this problem could be solved.

In sum, the art evinced no reason to combine the reverse osmosis and perstraction processes, let alone to use them together in the way this inventor did. In particular, this field of art recognized a number of serious shortcomings with the prior art reverse osmosis process. There was no indication anywhere in the art of how these shortcomings might be resolved. On the contrary, at least Michaels appeared to teach that the problems with the reverse osmosis technique could not be overcome. For this reason, Applicant submits that the combined references did not point to a clear way forward through which one could expect to overcome the well-recognized difficulties in decreasing alcohol content of a wine.

II. Objective Evidence of Nonobviousness

Even were the claims *prima facie* obvious over the combinations of the Michaels and Nielsen documents, the *prima facie* case is overcome by the objective evidence of nonobviousness submitted in the First and Second Declarations of David Wollan Under 37 C.F.R. § 1.132. Praise and recognition of an invention's significance by others in the field of the invention is objective evidence of nonobviousness. *Vulcan Engineering Co. Inc. v. Fata Aluminum, Inc.*, 278 F.3d 1366 (Fed. Cir. 2002). The invention claimed in independent claims 6 and 35, which was commercialized as the Memstar Alcohol Adjustment process, received the 2007 WOW award from the Wine Industry Suppliers Association. Nexus is shown both by the figure at the top right on the first page of the article and by the Mr. Wollan's statements in the Second Declaration.

As soon as its commercial introduction, the industry recognized that this invention was a significant advance over all of the earlier methods for reducing the alcohol concentration in beverages like wine. The article “Memstar wows judges with competition triumph” in *The Australian & New Zealand Grapegrower and Winemaker*, pp. 60-61 (July 2007), states that in its initial two years “the technology has rapidly been embraced by winemakers around the world.”

The importance of the claimed process continues to be recognized, even by its commercial competitors. At the 2010 Intervitis Interfructa International Congress in Stuttgart, Germany, a paper by Dr. Ferrarini (attached) was presented by E Bocca, a representative of Vason Group. Mr. Wollan describes in his First Declaration that, even though the Vason Group is a competitor to the claimed process, the Ferrarini paper recognizes that the Vason Group process leads to significant volatile flavor loss. The authors recognize in their materials that Applicant’s claimed process avoids that flavor loss.

The Second Declaration further discusses that Mr. Wollan’s process unexpectedly overcomes Michaels’s acknowledged problem of permeation of water from the strip solution into the beverage. And it does so without manipulating the composition of the strip solution, the only remedy offered by Michaels.

Another technique proposed in Smith, Patent Specification No. AU B 42319/93, discussed at page 2, lines 13-20 in Applicant's specification, distills the permeate stream in a high energy distillation column in a process that is costly in terms of energy consumption, requirements for regulatory compliance, and infrastructure costs. Applicant's invention ingeniously overcomes the unresolved problems of the prior art processes with surprising effectiveness. Synergy and unexpected results are further indications of nonobviousness.

The embodiment of the invention represented by claims 7, 8, and 36-38 is separately patentable as providing a beneficial improvement in yield that was both unavailable in the prior art methods and could not have been anticipated from those prior art methods. The slides accompanying the presentation of the Ferrarini paper also recognize the unexpectedly improved yield possible with the claimed embodiment in claims 7, 8, and 36-38. Neither the Michaels process nor the Nielsen process could include heating at any point without damaging the beverage; therefore, neither the Michaels process nor the Nielsen process could provide this improved yield. The improved yield could not have been expected from any combination of two methods if neither one could provide that improved yield. This unexpected advantage is also described in the Second Declaration. The additional process feature of claims 7, 8, and 36-38 is also an advantage that could not have been expected from the prior art processes. In both of the Nielsen and Michaels processes, the prior art processes, the materials subjected to the separation technique contains materials such as flavor components that would be adversely affected by heating. Thus, neither reference, nor any Nielsen process modified by Michaels, could benefit from elevated heating of a material subjected to the separation technique.

Thus, taken as a whole, Applicant believes the evidence shows that one of ordinary skill in the art had no reason to combine the processes of the Nielsen and Michaels documents and had no reason to combine them in the way suggested in the rejection. The evidence shows that, once public, this invention was recognized in the art to be a significant advance over prior art processes, and recognition of its significant benefits continues today.

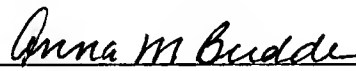
For these reasons, Applicant submits the invention is patentable over the cited combinations of art and requests reconsideration of the claims

Conclusion

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1220 (direct line).

Respectfully submitted,

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